

| EPOXY COATED REINFORCING BAR LIST, PRECAST ABUTMENT BACKWALL (ONE UNIT)   |                             |                               |     |        |        |     |        |        |     |         |        |     |        |                                             |     |        |        |     |        |        |     |        |        |     |         |    |
|---------------------------------------------------------------------------|-----------------------------|-------------------------------|-----|--------|--------|-----|--------|--------|-----|---------|--------|-----|--------|---------------------------------------------|-----|--------|--------|-----|--------|--------|-----|--------|--------|-----|---------|----|
| (INCLUDED IN BID ITEM "PRECAST ABUTMENT BACKWALL (CONCRETE WINGS)", EACH) |                             |                               |     |        |        |     |        |        |     |         |        |     |        |                                             |     |        |        |     |        |        |     |        |        |     |         |    |
|                                                                           |                             | REINFORCED CONCRETE BOX BEAMS |     |        |        |     |        |        |     |         |        |     |        | PRETENSIONED PRESTRESSED CONCRETE BOX BEAMS |     |        |        |     |        |        |     |        |        |     |         |    |
|                                                                           |                             | 30'-0"                        |     |        | 40'-0" |     |        | 50'-0" |     |         | 30'-0" |     |        | 40'-0"                                      |     |        | 50'-0" |     |        | 60'-0" |     | 70'-0" |        |     |         |    |
| BAR                                                                       | LOCATION                    | SHAPE                         | NO. | LENGTH | WEIGHT | NO. | LENGTH | WEIGHT | NO. | LENGTH  | WEIGHT | NO. | LENGTH | WEIGHT                                      | NO. | LENGTH | WEIGHT | NO. | LENGTH | WEIGHT | NO. | LENGTH | WEIGHT |     |         |    |
| 4d1                                                                       | BACKWALL, VERTICAL STIRRUPS |                               | 20  | 6'-1"  | 81     | 20  | 6'-1"  | 81     | 20  | 7'-1"   | 95     | 20  | 5'-1"  | 68                                          | 20  | 5'-1"  | 68     | 20  | 6'-1"  | 81     | 20  | 6'-1"  | 81     | 20  | 7'-1"   | 95 |
| 4d2                                                                       | BACKWALL, VERTICAL STIRRUPS |                               | 1   | 9'-11" | 7      | 1   | 9'-11" | 7      | 1   | 10'-11" | 7      | 1   | 8'-11" | 6                                           | 1   | 8'-11" | 6      | 1   | 9'-11" | 7      | 1   | 9'-11" | 7      | 1   | 10'-11" | 7  |
| 4d3                                                                       | BACKWALL, VERTICAL STIRRUPS |                               | 1   | 8'-11" | 6      | 1   | 8'-11" | 6      | 1   | 9'-11"  | 7      | 1   | 8'-3"  | 6                                           | 1   | 8'-3"  | 6      | 1   | 8'-11" | 6      | 1   | 8'-11" | 6      | 1   | 9'-11"  | 7  |
| 4d4                                                                       | BACKWALL, VERTICAL STIRRUPS |                               | 1   | 8'-1"  | 5      | 1   | 8'-1"  | 5      | 1   | 9'-1"   | 6      | 1   | 7'-9"  | 5                                           | 1   | 7'-9"  | 5      | 1   | 8'-1"  | 5      | 1   | 8'-1"  | 5      | 1   | 9'-1"   | 6  |
| 4d5                                                                       | BACKWALL, VERTICAL STIRRUPS |                               | 1   | 7'-1"  | 5      | 1   | 7'-1"  | 5      | 1   | 8'-1"   | 5      | 1   | 7'-1"  | 5                                           | 1   | 7'-1"  | 5      | 1   | 7'-1"  | 5      | 1   | 7'-1"  | 5      | 1   | 8'-1"   | 5  |
| 8d7 *                                                                     | BACKWALL, VERTICAL          |                               | 10  | 2'-2"  | 58     | 10  | 2'-2"  | 58     | 10  | 2'-8"   | 71     | 10  | 1'-8"  | 45                                          | 10  | 1'-8"  | 45     | 10  | 2'-2"  | 58     | 10  | 2'-2"  | 58     | 10  | 2'-8"   | 71 |
| 6g1                                                                       | BACKWALL, HORIZONTAL        |                               | 2   | 26'-4" | 79     | 2   | 26'-4" | 79     | 2   | 26'-10" | 81     | 2   | 25'-3" | 76                                          | 2   | 25'-3" | 76     | 2   | 26'-4" | 79     | 2   | 26'-4" | 79     | 2   | 26'-10" | 81 |
| 6g2                                                                       | BACKWALL, HORIZONTAL        |                               | 2   | 22'-1" | 66     | 2   | 22'-1" | 66     | 2   | 22'-7"  | 68     | 2   | 21'-7" | 65                                          | 2   | 21'-7" | 65     | 2   | 22'-1" | 66     | 2   | 22'-1" | 66     | 2   | 22'-7"  | 68 |
| 6g3                                                                       | BACKWALL, HORIZONTAL        |                               | 2   | 24'-0" | 72     | 2   | 24'-0" | 72     | 2   | 24'-0"  | 72     | 2   | 23'-0" | 69                                          | 2   | 23'-0" | 69     | 2   | 24'-0" | 72     | 2   | 24'-0" | 72     | 2   | 24'-0"  | 72 |
| 6g4                                                                       | BACKWALL, HORIZONTAL        |                               | 4   | 3'-7"  | 22     | 4   | 3'-7"  | 22     | 4   | 3'-7"   | 22     | 4   | 2'-7"  | 16                                          | 4   | 2'-7"  | 16     | 4   | 3'-7"  | 22     | 4   | 3'-7"  | 22     | 4   | 3'-7"   | 22 |
| TOTAL (LBS.)                                                              |                             |                               | 401 |        |        | 401 |        |        | 434 |         |        | 361 |        |                                             | 361 |        |        | 401 |        |        | 401 |        |        | 434 |         |    |

\* SEE BENT BAR DETAILS. THE LENGTHS SHOWN DO NOT INCLUDE AN ALLOWANCE FOR THE THREADED END. BAR LENGTHS MAY NEED TO INCREASE DEPENDING ON THE MECHANICAL COUPLER ASSEMBLY USED. THE COST OF THE THREADED PORTION OF THESE BARS IS TO BE INCLUDED IN THE PRICE BID FOR THE BACKWALLS. THE WEIGHT OF THE THREADED END IS NOT INCLUDED IN THE QUANTITY SHOWN.

**ABUTMENT NOTES:**  
 MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN. ABUTMENT PILES SHALL BE DRIVEN TO VALUES SHOWN IN THE DESIGN PLANS. THE BACKWALL SHALL BE PLACED AFTER THE UHPC JOINTS BETWEEN THE BEAMS HAVE BEEN COMPLETED. MECHANICAL COUPLERS SHALL BE EPOXY COATED. THE MECHANICAL COUPLERS SHALL MEET THE REQUIREMENTS OF MATERIALS IN 451 APPENDIX E, EXCEPT THE MECHANICAL SPLICE IS REQUIRED TO BE EMBEDDED ON THE ABUTMENT FOOTING SIDE OF THE CONSTRUCTION JOINT. THE PRECAST BACKWALLS SHALL BE DRY FITTED TO THE PRECAST ABUTMENTS IN THE PRECASTER'S YARD OR SHOP BEFORE SHIPPING THE PIECES TO THE FIELD. THE ENGINEER SHALL HAVE 48 HOURS NOTICE TO VIEW AND APPROVE THE CONNECTED PRECAST PIECES BEFORE THEY ARE SHIPPED TO THE FIELD.

| EPOXY COATED REINFORCING BAR LIST, PRECAST ABUTMENT FOOTING (ONE FOOTING) |                         |                               |       |        |        |       |        |        |       |        |        |       |        |                                             |       |        |        |       |        |        |       |        |        |  |
|---------------------------------------------------------------------------|-------------------------|-------------------------------|-------|--------|--------|-------|--------|--------|-------|--------|--------|-------|--------|---------------------------------------------|-------|--------|--------|-------|--------|--------|-------|--------|--------|--|
| (INCLUDED IN BID ITEM "PRECAST FOOTING (CONCRETE WINGS)", EACH)           |                         |                               |       |        |        |       |        |        |       |        |        |       |        |                                             |       |        |        |       |        |        |       |        |        |  |
|                                                                           |                         | REINFORCED CONCRETE BOX BEAMS |       |        |        |       |        |        |       |        |        |       |        | PRETENSIONED PRESTRESSED CONCRETE BOX BEAMS |       |        |        |       |        |        |       |        |        |  |
|                                                                           |                         | 30'-0"                        |       |        | 40'-0" |       |        | 50'-0" |       |        | 30'-0" |       |        | 40'-0"                                      |       |        | 50'-0" |       |        | 60'-0" |       | 70'-0" |        |  |
| BAR                                                                       | LOCATION                | SHAPE                         | NO.   | LENGTH | WEIGHT                                      | NO.   | LENGTH | WEIGHT | NO.   | LENGTH | WEIGHT | NO.   | LENGTH | WEIGHT |  |
| 5c1                                                                       | FOOTING END, VERTICAL   |                               | 8     | 3'-9"  | 31     | 8     | 3'-9"  | 31     | 8     | 3'-9"  | 31     | 8     | 3'-9"  | 31                                          | 8     | 3'-9"  | 31     | 8     | 3'-9"  | 31     | 8     | 3'-9"  | 31     |  |
| 5c2                                                                       | FOOTING END, HORIZONTAL |                               | 8     | 4'-9"  | 40     | 8     | 4'-9"  | 40     | 8     | 4'-9"  | 40     | 8     | 4'-9"  | 40                                          | 8     | 4'-9"  | 40     | 8     | 4'-9"  | 40     | 8     | 4'-9"  | 40     |  |
| 8d6**                                                                     | FOOTING, VERTICAL       |                               | 20    | 2'-7"  | 138    | 20    | 2'-7"  | 138    | 20    | 2'-7"  | 138    | 20    | 2'-7"  | 138                                         | 20    | 2'-7"  | 138    | 20    | 2'-7"  | 138    | 20    | 2'-7"  | 138    |  |
| 6f1                                                                       | FOOTING, LONGITUDINAL   |                               | 12    | 40'-5" | 1295   | 12    | 40'-5" | 1295   | 12    | 40'-5" | 1295   | 12    | 40'-5" | 1295                                        | 12    | 40'-5" | 1295   | 12    | 40'-5" | 1295   | 12    | 40'-5" | 1295   |  |
| 6f2                                                                       | FOOTING, LONGITUDINAL   |                               | 10    | 5'-3"  | 79     | 10    | 5'-3"  | 79     | 10    | 3'-11" | 71     | 10    | 5'-3"  | 79                                          | 10    | 5'-3"  | 79     | 10    | 3'-11" | 71     | 10    | 5'-3"  | 79     |  |
| 5p1                                                                       | FOOTING, HOOPS          |                               | 74    | 11'-8" | 900    | 74    | 11'-8" | 900    | 64    | 11'-8" | 779    | 74    | 11'-8" | 900                                         | 74    | 11'-8" | 900    | 74    | 11'-8" | 900    | 64    | 11'-8" | 779    |  |
| 5p2                                                                       | FOOTING, HOOPS          |                               | 4     | 12'-8" | 53     | 4     | 12'-8" | 53     | 4     | 12'-8" | 53     | 4     | 12'-8" | 53                                          | 4     | 12'-8" | 53     | 4     | 12'-8" | 53     | 4     | 12'-8" | 53     |  |
| 1 1/4" DIA. SMOOTH DOWELS                                                 |                         |                               | 8     | 2'-9"  | 92     | 8     | 2'-9"  | 92     | 8     | 3'-3"  | 109    | 8     | 2'-3"  | 75                                          | 8     | 2'-3"  | 75     | 8     | 2'-9"  | 92     | 8     | 2'-9"  | 92     |  |
| TOTAL (LBS.)                                                              |                         |                               | 2,628 |        |        | 2,628 |        |        | 2,516 |        |        | 2,611 |        |                                             | 2,611 |        |        | 2,628 |        |        | 2,499 |        | 2,631  |  |

\*\* INCLUDES MECHANICAL COUPLERS. SEE BENT BAR DETAILS.

**CMP PILE POCKET NOTE:**  
 PILE POCKETS SHALL CONSIST OF GALVANIZED STEEL CORRUGATED METAL PIPE (CMP), TYPE 1, 16 GAGE, IN ACCORDANCE WITH THE PRECAST CONCRETE ELEMENTS NOTES. CMP FOR INDIVIDUAL POCKETS SHALL CONSIST OF A SINGLE LENGTH OF PIPE. SPLICING OF PIPE SECTIONS SHALL NOT BE ALLOWED. NOMINAL CMP SIZE SHALL BE 21". FOLLOWING SETTING OF THE FOOTING, THE PILE POCKETS SHALL BE FILLED LEVEL WITH THE TOP OF FOOTING USING HIGH EARLY STRENGTH SELF-CONSOLIDATING CONCRETE IN ACCORDANCE WITH THE PRECAST CONCRETE ELEMENTS NOTES.

### BACKWALL BENT BAR DETAILS

| BAR DIM. | REINFORCED CONCRETE BOX BEAMS |            |            | PRETENSIONED PRESTRESSED CONCRETE BOX BEAMS |            |            |
|----------|-------------------------------|------------|------------|---------------------------------------------|------------|------------|
|          | 30'-0"                        | 40'-0"     | 50'-0"     | 30'-0"                                      | 40'-0"     | 50'-0"     |
| 6g1 "A"  | 3'-9"                         | 3'-9"      | 3'-9"      | 2'-9"                                       | 3'-9"      | 3'-9"      |
| 6g1 "B"  | 1'-10 1/2"                    | 1'-10 1/2" | 1'-10 1/2" | 1'-4 1/2"                                   | 1'-10 1/2" | 1'-10 1/2" |
| 6g1 "C"  | 4'-2"                         | 4'-2"      | 4'-2"      | 3'-1"                                       | 3'-1"      | 4'-2"      |
| 6g1 "D"  | 2'-0"                         | 2'-0"      | 2'-6"      | 2'-0"                                       | 2'-0"      | 2'-6"      |
| 4d1 "E"  | 2'-0"                         | 2'-0"      | 2'-6"      | 1'-6"                                       | 1'-6"      | 2'-0"      |
| 4d2 "E"  | 3'-10"                        | 3'-10"     | 4'-4"      | 3'-4"                                       | 3'-10"     | 4'-4"      |
| 4d3 "E"  | 3'-4"                         | 3'-4"      | 3'-10"     | 3'-0"                                       | 3'-4"      | 3'-10"     |
| 4d4 "E"  | 2'-11"                        | 2'-11"     | 3'-5"      | 2'-9"                                       | 2'-11"     | 3'-5"      |
| 4d5 "E"  | 2'-5"                         | 2'-5"      | 2'-11"     | 2'-5"                                       | 2'-5"      | 2'-11"     |

NOTES: ALL DIMENSIONS ARE OUT TO OUT. D= PIN DIAMETER.

### FOOTING BENT BAR DETAILS

NOTE: ALL DIMENSIONS ARE OUT TO OUT. D= PIN DIAMETER.

### ADDITIONAL CONCRETE

| EACH FOOTING (C.Y.) | ROADWAY GRADE AT ABUTMENT |     |     |     |     |
|---------------------|---------------------------|-----|-----|-----|-----|
|                     | 1%                        | 2%  | 3%  | 4%  | 5%  |
|                     | 0.5                       | 1.1 | 1.6 | 2.2 | 2.7 |

**NOTES:**  
 THE ADDITIONAL CONCRETE TABLE LISTS THE ADDITIONAL CONCRETE VOLUME REQUIRED IN EACH PRECAST ABUTMENT FOOTING BASED ON THE ROADWAY GRADE AT EACH ABUTMENT. THIS ADDITIONAL CONCRETE IS INCLUDED IN THE BID ITEM FOR PRECAST FOOTING (CONCRETE WINGS). THE QUANTITIES SHOWN IN THE PRECAST CONCRETE QUANTITIES TABLE ARE BASED ON 0% GRADE.

**BACKWALL SETTING NOTES:**  
 THE 8d7 BARS SHALL BE SET AS DOWELS IN PREFORMED HOLES. THE DOWELS SHALL BE INSTALLED IN ACCORDANCE WITH THE GROUT MANUFACTURER'S RECOMMENDATIONS. A POLYMER GROUT SYSTEM IN ACCORDANCE WITH STANDARD SPECIFICATIONS SHALL BE USED AS A BONDING AGENT FOR VERTICAL DOWELS. SET PRECAST BACKWALLS ON A EPOXY GROUT BED TO HELP LEVEL AND CONNECT THE PRECAST ELEMENTS. FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION.

### PRECAST CONCRETE QUANTITIES (INCLUDED IN PRECAST UNITS. (CONCRETE WINGS))

| LOCATION                                 | SPAN | REINFORCED CONCRETE BOX BEAMS |        |        | PRETENSIONED PRESTRESSED CONCRETE BOX BEAMS |        |        |        |        |
|------------------------------------------|------|-------------------------------|--------|--------|---------------------------------------------|--------|--------|--------|--------|
|                                          |      | 30'-0"                        | 40'-0" | 50'-0" | 30'-0"                                      | 40'-0" | 50'-0" | 60'-0" | 70'-0" |
| EACH BACKWALL UNIT (C.Y.)*               |      | 2.3                           | 2.3    | 2.8    | 1.8                                         | 1.8    | 2.3    | 2.3    | 2.8    |
| EACH FOOTING (C.Y.)                      |      | 15.1                          | 15.1   | 14.8   | 15.1                                        | 15.1   | 14.8   | 14.8   | 14.5   |
| CMP PILE POCKETS (EACH FOOTING) (C.Y.)** |      | 1.7                           | 1.7    | 2.0    | 1.7                                         | 1.7    | 2.0    | 2.0    | 2.3    |

\* INCLUDES THE COST OF FURNISHING AND PLACING ALL PREFORMED EXPANSION JOINT FILLER.  
 \*\* HIGH EARLY STRENGTH SELF-CONSOLIDATING CONCRETE.

LATEST REVISION DATE  
 Approved by Bridge Engineer  
 [Signature]

STANDARD DESIGN - 30'-0" ROADWAY, SINGLE SPAN  
**CONCRETE BOX BEAM BRIDGES**

DECEMBER, 2016

**ABUTMENT DETAILS (PRECAST) CONCRETE WING QUANTITIES 30° SKEW**

**B30-23-16**